# IN THE FIELD

Field Museum
Member Magazine

Vol. 96, No. 1
Spring 2025

# MEMBERS SEE IT FIRST. MEMBERS SEE IT FREE.

Explore the world in our galleries, right here in Chicago—all year long. Members enjoy the following benefits:

- Free all-access admission
- 74th Annual Members' Nights (Wednesday, May 14 and Friday, May 16)
- Spooktacular Science family day in October
- Members-only Holiday Lounge in December
- After-hours exhibition openings and lectures
- Discounts on 3D movie tickets—up to 50% off
- Discounts on birthday party packages
- 10% off Museum store and restaurant purchases
- Family nights and programs
- Discounts and early registration for Summer Camps, Dozin' with the Dinos, and other educational programs
- Double discount days in October and December (20% off in the restaurants and Museum store)
- Free subscription for *In The Field*, including a family friendly pull-out section and the annual photography competition
- Member e-newsletter with updates for the whole family
- Free reciprocal admission to participating science and technology museums all over the world (ASTC)
- Free admission to annual heritage month programs

# *IN THE FIELD* PHOTOGRAPHY CONTEST

The Field Museum encourages everyone to get outside and connect with the natural world and the human story. What better way than snapping a stunning photograph of the nature that's all around us?

© JACOB BADAGLIACCO, MUSEUM MOMENTS RUNNER-UP, 2025

© SONEY OLHAVA, MUSEUM MOMENTS WINNER, 2025

## CATEGORIES:

**Urban Wildlife**
Document the cooperation, or lack thereof, between the natural world and human-made environments.

**Real-life Diorama**
Inspired by the Field's renowned taxidermy, portray animals and plants in their natural habitat. This category can include landscapes.

**Museum Moments**
There's so much to do and see at the Field Museum. Snap a photo of what inspires you about our collections, learning opportunities, and historic lakefront building. Portraits and candids of members and member families are encouraged with proper releases.

**Kids can participate too!** For each category we will select a winner who is under 18 years of age in addition to an adult winner.

© JULIA CZECHOWSKA, URBAN WILDLIFE UNDER 18 WINNER, 2025

Submissions will be open starting **Monday, April 7 through Monday, August 4**. Scan the QR code or visit fieldmuseum.io/field-photo-contest for more information about how to enter for a chance to have your work displayed in the Museum.

*No purchase necessary. Open to Field Museum Members and their households ages 5 and up; participation by minors requires parental permission. Must be legal U.S. resident. Contest begins 04/07/2025 and ends 08/04/2025. Void where prohibited. Official rules available at fieldmuseum.io/field-photo-contest.*

# *Experience* AFRICA FASHION

**BY RYAN SCHUESSLER,**
SENIOR EXHIBITION DEVELOPER

Originally developed by the Victoria and Albert Museum in London, *Africa Fashion* has opened at the Field Museum on its global tour.

Fashion is more than just clothing—it encompasses history, culture, community, and fine art. *Africa Fashion* features more than 180 works from 20 African countries, whose designers and artists are hailed as some of the world's most cutting-edge creatives, many of whose work will be displayed for the first time in the United States.

This stunning collection is staged in a gorgeous gallery and features immersive displays of haute couture and ready-to-wear apparel, as well as photographs, literature, sketches, music, film and catwalk footage, textiles, and jewelry.

From the vangaurds who first gained worldwide attention like Kofi Ansah (Ghana) and Shade Thomas-Fahm (Nigeria), to the newest generation of creatives, such as Thebe Magugu (South Africa) and Gouled Ahmed (Djibouti), the show features an array of African artists and designers celebrating tradition and blending it with modern fashion.

***Africa Fashion* is open at the Field Museum now through June 28, 2025.**

V&A *Africa Fashion* is created by the V&A- touring the world

Field Museum Major Sponsor: Allstate.

*(Left) Designs by Kofi Anash, Blue Zone collection, for Revue Noire magazine, Accra 1997.*

*(Opposite) Imane Ayissi, Mbeuk Idourrou collection, Paris, France. Autumn/Winter collection, 2019.*

© 1997 ERIC DON-ARTHUR

"FASHION IS MORE THAN JUST CLOTHING—IT ENCOMPASSES HISTORY, CULTURE, COMMUNITY, AND FINE ART."
Jaap Hoogstraten,
*Head of Exhibitions*

© IMANE AYISSI

*(Left) A team of movers load a case of taxidermied lions and tigers into the Field Museum prior to it's opening in 1921. This very case included the lion and tiger specimens found in Cats: Predators to Pets.*

*(Below) Assistant Conservator Dan Kaping repairs the tiger's teeth and gums.*

GN84566, FIELD MUSEUM (1920)

FIELD MUSEUM

# DON'T MISS THESE HIDDEN TREASURES IN *CATS: PREDATORS TO PETS*

**BY MALAYA TINDONGAN,** ASSISTANT EDITOR

*Cats: Predators to Pets* features dozens of dynamic specimens, some of which come from the Field's very own collection! Many specimens housed at the Field, especially taxidermied specimens, were collected more than a hundred years ago, before the Field Museum existed as we know it today. On your next visit to *Cats: Predators to Pets*, you can catch a glimpse of two handsome big cats—a lion and tiger—from the Field's original collection.

Originally part of Ward's Natural Science Establishment in Rochester, New York, both of these specimens were displayed at the 1893 World's Fair in Chicago. By 1895, this collection, which also included mounted birds and mammals, skeletons, fossils, shells, and meteorites, became the core of the Field Museum's first collection.

With torn fur, bent whiskers, and damaged teeth and claws, these 132 year old cats needed care before they were ready for display. To address this wear and tear, Assistant Conservator Daniel Kaping took them into his lab for evaluation and restoration.

Adopting techniques pioneered by taxidermists and conservators at major national history museums over the past century, Kaping sometimes has to get creative, using cowhide to patch areas where fur is missing or damaged or man-made materials to replace broken or missing parts such as teeth and claws. For the tiger, he also utilized the underfur of an African porcupine as whiskers.

"When you can, you put in an isolating layer. So, I take Hollytex, which is a spun bonded polyester that I've covered with adhesive, and then I heat-tack that onto to the skin," said Kaping "If someone needed to remove my repairs later, they could either heat them up or use solvent to peel them away."

On your next visit to *Cats: Predators to Pets*, make sure to stop by two of the Field Museum's oldest residents and check out Dan Kaping's masterful repairs!

***Cats: Predators to Pets* is open at the Field Museum until Sunday, April 27. Admission is free for Members.**

***Cats: Predators to Pets***
**Field Museum Major Sponsor:**

DISCOVER

**Exhibition Sponsor:** WORLD'S BEST CAT LITTER

This exhibition was created by the Muséum national d'Histoire naturelle, France.

MUSÉUM NAT. HIST. NATURELLE

# CHICAGO SHINES IN *CONNECTING THREADS*

**BY RYAN SCHUESSLER,** SENIOR EXHIBITION DEVELOPER

When Jennifer Akese-Burney was growing up in Ghana, a neighbor introduced her to sewing. She's come a long way since then.

A graduate of Takoradi Technical University and now based in Chicago, Akese-Burney founded Akese Stylelines in 2005 and adds the Field Museum to the impressive list of venues where her work is showcased.

Akese-Burney's designs are featured in *Connecting Threads: Africa Fashion in Chicago*, the companion exhibition to *Africa Fashion*. For *Connecting Threads*, which celebrates Chicago's Black and African fashion scene, Akese-Burney designed the Transformation Collection, a line inspired by objects in the Field's African collections.

"You just have to see it. Each piece has its own story," Akese-Burney says. "The pieces will speak to you and I want that curiosity to linger on, even when you leave the Museum. I pray that this work gives you motivation to travel, to read about other cultures, and to get involved in things other than what you already know."

Akese-Burney co-curated *Connecting Threads* with Chicago native Melody Boykin, founder of Black Fashion Week USA and author of *The Little Black Boutique Guide*.

In all her work, Boykin seeks to celebrate Black designers.

"My mission has always been to uplift and to empower Black designers by showcasing their creativity on the runway," Boykin says. "I think the future is very promising. I'm happy to see that so many people are embracing their African heritage in fashion design."

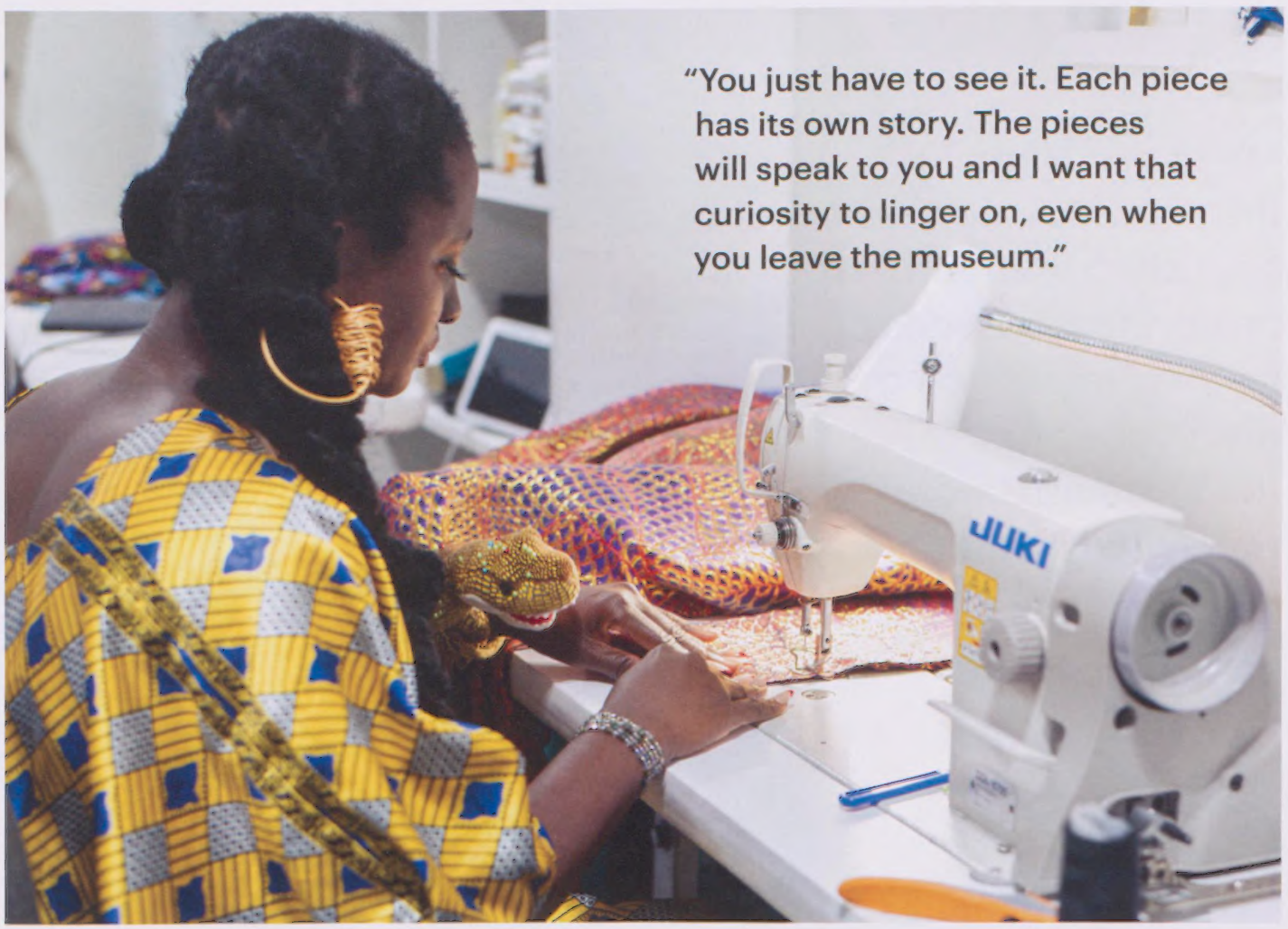
Field Visitors can see *Connecting Threads* now until March 1, 2026.

*Connecting Threads: Africa Fashion in Chicago* was created by the Field Museum.

Major Sponsor:

Allstate.

*(Below) Jennifer Akese-Burney working on garments in her studio.*


"You just have to see it. Each piece has its own story. The pieces will speak to you and I want that curiosity to linger on, even when you leave the museum."
JUKI

© LATOYA FLOWERS

# GET READY FOR 74TH ANNUAL MEMBERS' NIGHTS!

**May 14 and May 16, 2025**

## Members' Night at the Field Museum is a cherished tradition that celebrates the legacy, history, and ongoing discoveries that make the Museum a world-renowned institution.

Members gain exclusive, behind-the-scenes access to the groundbreaking research, rare collections, and dedicated scientists that keep the Museum at the forefront of scientific research and public programs. Meet our scientists face-to-face and hear about what goes on in the labs behind the scenes. Explore the collections like never before and meet the people who care for each of the 40 million objects and specimens housed at the Museum. You never know what you'll discover on Members' Nights.

This year, Members' Night will take place on Wednesday, **May 14** and Friday, **May 16**, and we hope you can join us for this celebration!

**Scan the QR code** to register or go online to https://fieldmuseum.io/74thMembersNights. Please register by Sunday, May 11.

## How much will you discover in one night?

*(Above) Ate Wamz, Iris Viacrusis, and BIBBAK members touring Field Museum Philippine collections with Jamie Kelly, Head of Anthropology Collections, and Julia Kennedy, Collections Assistant.*



In November, a group of local and traveling Filipinos visited the Field Museum to see the Philippines collection and reconnect with material culture that had been lost for more than a century.

One of the largest exhibitions at the 1904 World's Fair in St. Louis was a 47-acre "living exhibit" of about 1,200 Filipinos. It was created to introduce the newly-acquired U.S. colony following the Spanish-American War. Many of the Filipinos brought over were presented as "uncivilized" and "savage." After the Fair, much of the material culture from the exhibition was distributed among various museums across the United States.

One of the Field's Filipino visitors was traditional tattoo artist Wilma Gaspili, or "Ate Wamz"—*Ate* meaning older sister. Before her journey to the Museum, Ate Wamz met with and tattooed descendants of the Igorot tribe who had been a part of the 1904 World's Fair. When they discovered she was planning a trip to the United States, they asked if she could visit archives and perform a ritual.

Residing in Benguet, Philippines, she represents two major tribes in the Philippines through her bloodline: Ifugao and Benguet.

Beginning her journey as a traditional tattoo artist 2 years ago, Wamz's calling is reconnecting people with their tribes and cultures through expression of tribal patterns. Traditional Filipino tattooing is done with a lemon tree thorn tied to a rod and handmade ink. This method is how people in the Philippines have been marking their bodies for generations.

After being connected to Jamie Kelly, McCarter Collections Manager of Anthropology at the Field, Ate Wamz and Iris Viacrusis, a Filipino textile expert and designer, reached out to a community partner, Alpha Sadcopen of BIBBAK (Benguet, Ifugao, Bontoc, Apayao, Bagiou, and Kalinga) to plan a collections visit.

Together, Wamz, Viacursis, Sadcopen, and Kelly looked through the physical collections and the Museum's digital database. Ate Wamz was able to offer insight on traditional tattooing items, while Iris informed about textile technology.

"Visits such as this connect cultural knowledge holders and practitioners to their historical heritage at the Museum and are vital in the continuation and, in some cases, revitalization efforts of specific cultural practices," said Kelly, "We are honored to assist in facilitating these connections."

Ate Wamz selected three items—a blanket, a spear, and a gong—to bring outside for the ceremonial ritual. She performed the ritual in Kankanaey saying "Take this blanket to keep you warm, take this spear to protect yourself, and beat these gongs to summon the lost spirits home."

During the ritual, Ate Wamz said a prayer and made a traditional offering of rice wine to the land and the lives that were lost.

Visits such as Wamz and Viacrusis' lead to co-curation partnerships in caring for and accessing ethnographic collections at the Field Museum.

*(Below) Ate Wamz, BIBBAK members, and Malaya Tindongan with Philippine collections used for Ate Wamz's ritual.*

**"Visits such as this connect cultural knowledge holders and practitioners to their historical heritage at the Museum and are vital in the continuation and, in some cases, revitalization efforts, of specific cultural practices."**

**Jamie Kelly**
Head of Anthropology Collections

# BIRDS FROM HELL (CREEK)

**BY ALEXANDER CLARK,** PHD STUDENT AT UNIVERSITY OF CHICAGO, AND **JINGMAI O'CONNOR, PHD,** ASSOCIATE CURATOR OF FOSSIL REPTILES, NEGAUNEE INTEGRATIVE RESEARCH CENTER

Hell Creek is one of the most studied and excavated fossil-bearing formations in North America. These 68–66 million year old deposits, spread across Montana, the Dakotas, and Wyoming, have yielded some of the world's most popular dinosaurs, including our very own SUE the *T. rex*. Far less known are the prehistoric birds which flew above the heads of these famous giants.

Today, birds are the most globally widespread and arguably most successful group of land vertebrates on the planet. During the Cretaceous, the final period of the Mesozoic Era, the most diverse group of birds were the enantiornithines. Though successful for at least 65 million years, this group is now extinct, meeting their demise alongside non-avian dinosaurs in the events triggered by a massive asteroid impact 66 million years ago. Within the Hell Creek Formation, only one enantiornithine bird has been found—*Avisaurus archibaldi* of the family Avisauridae. Proportionally large for an enantiornithine (hawk-sized), this species is known only from a single bone—the tarsometatarsus, or the bone between the ankle and toes.

Fortunately, a bird's feet are their primary interface with the world, making foot bones quite useful indicators of ecology.

Three newly described foot bones increase the number of known Hell Creek enantiornithines from one to four. Two of these new specimens belong to the family Avisauridae, characterized by a proportionally wide tarsometatarsus, indicating the outer part of the leg formed a biomechanically efficient lever system. This allowed these birds to grip and carry proportionally heavy prey, similar to today's raptors, which would have made them frightening predators. Another unique avisaurid feature is the presence of a very large tubercle, a rounded bump on the bone, for muscle attachment The size and position of this tubercle indicates these birds had powerful ankle flexion, which is a necessity for flying with heavy prey clutched in their talons. Although there is much to learn and discover about the birds that lived in the last days of the dinosaurs, these new fossils indicate avisaurids were a diverse component of North American Late Cretaceous—and that in Hell Creek, *T. rex* wasn't the only predator to fear.

*(Top, left) Scientific illustration of* Avisaurus darwini *by Ville Sinkonnen.*

*(Left) The foot bones of* Avisaurus darwini. *indeterminate* Avisaurus *and* Magnusavis ekalakaensis

**Have you ever heard of the longest serving woman to rule Egypt as pharaoh?** Meet Hatshepsut, King of Egypt from 1479 to 1458 BCE.

# Meet Hatshepsut, Egypt's longest serving Woman Pharaoh

After the death of her husband, Thutmose II, the throne then went to his son, and Hatshepsut's stepson, Thutmose III. But because Thutmose III was an infant at the time of his father's death, Hatshepsut acted as a regent, or active ruler. By her seventh year as Regent, Hatshepsut crowned herself King of Egypt, upgrading herself from co-ruler to sole ruler.

She had a relatively peaceful reign that was focused on trade. She brought ivory, ebony, gold, incense, and leopard skins to Egypt. She also remodeled temples created by her father, Thutmose I, and created two of her own: Speos Artemidos and Dayr al-Ba rī.

Hatshepsut instructed her portraits, statues, and depictions to be presented with traditional male features, such as a beard and muscular figure. However, 20 years after her death, many of the statues and depictions were destroyed by Thutmose III, likely in an attempt to erase her influence and the likelihood of another woman in the position of pharaoh. But, despite the attempted erasure of her legacy, her reign as King of Egypt is still remembered, laying the foundation for future female rulers like Cleopatra.

See if you can find the two statuettes of Hatsheptsut's officials—including her favorite architect, Senmut—in *Inside Ancient Egypt*.

→ Color me!

# Write your name in Heiroglyphics!

Hieroglyphs were one form of writing used by Ancient Egyptians to represent their language. While there is no exact match of hieroglyphic symbols to the alphabet used in English, scientists have created a simplified translation. Use their guide to write your name like an Ancient Egyptian!

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

CH

SH

Write your name here!

# KENTE CLOTH

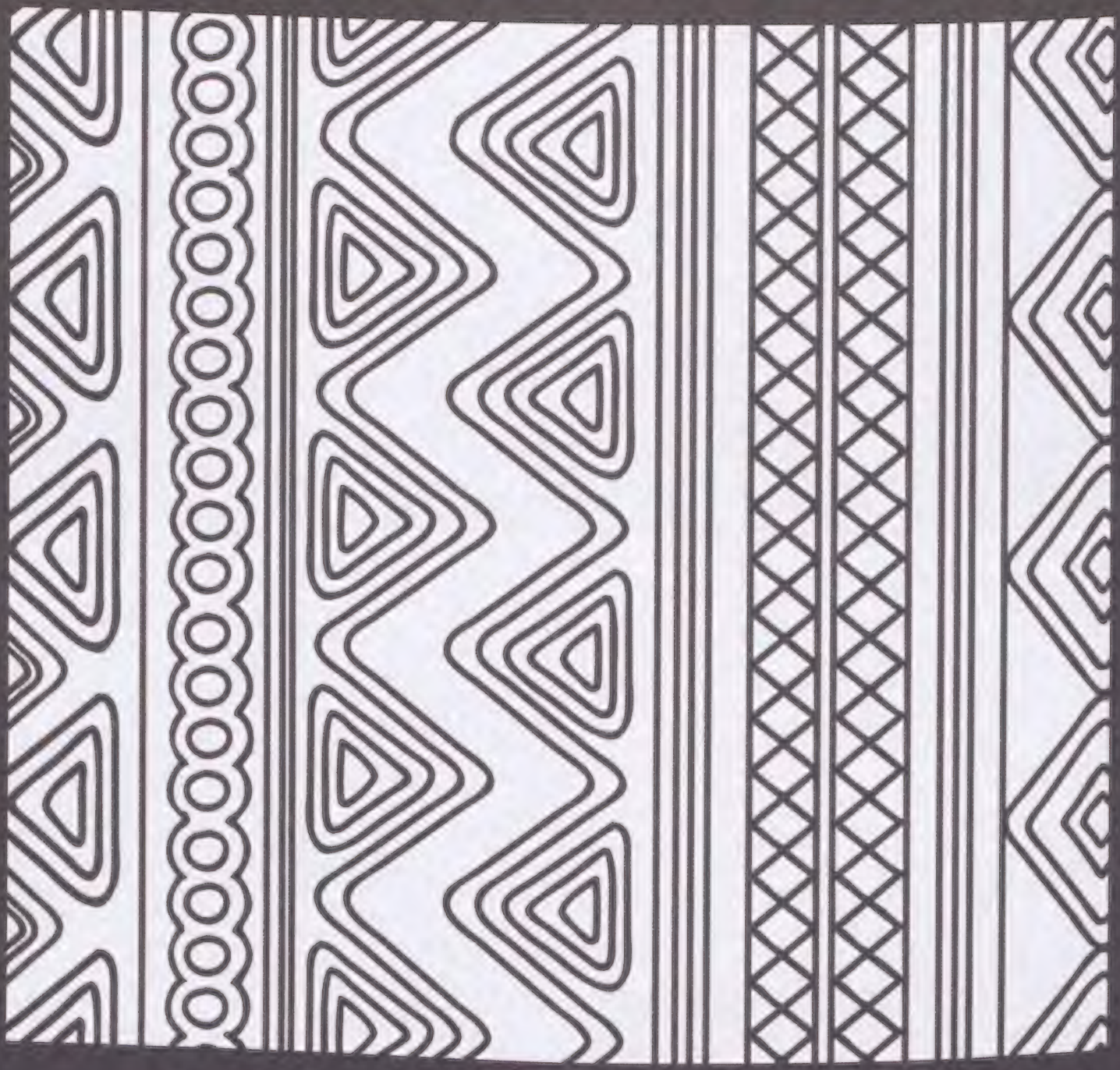
One pattern you can spot in *Africa Fashion* is called *kente*, a traditional weaving pattern from Ghana, that translates to "basket." Kente is the most widely known cloth produced in Africa. While it is generally associated with Akan people from West Africa, particularly the Ashanti Kingdom, the term originates from the Fante tribe. The style's origins are said to be from a story of two Ashanti weavers who found a spider's web and were inspired to recreate it. Kente patterns are widely known for their use of geometric patterns and vibrant colors.

To create these bright, colorful textiles, skilled weavers familiar with the detailed technique use a horizontal strip loom. Strings are fastened to the loom, and woven into strips about 4 inches wide. The narrow strips of fabric are then placed together and sewn into a larger piece. **Kente is known for it's bright geometric patterns, see the back of this page for an example!**

## ↓ DESIGN A KENTE PATTERN!

Color a

# KENTE PATTERN



# USING ENVIRONMENTAL DNA TO INVENTORY VERTEBRATES IN THE KANKAKEE RIVER

**BY SOPHIE PICQ, PHD,** eDNA RESEARCH SCIENTISTS, NEGAUNEE INTEGRATIVE RESEARCH CENTER; **CALEB MCMAHAN, PHD,** HEAD OF ZOOLOGICAL COLLECTIONS, GANTZ FAMILY COLLECTIONS CENTER; AND **LESLEY DE SOUZA, PHD,** SENIOR CONSERVATION ECOLOGIST, KELLER SCIENCE ACTION CENTER

Freshwater ecosystems are among the most threatened on the planet, yet they are home to nearly one-third of vertebrate animal diversity in less than 0.05% of available water on Earth. Decline in biodiversity occurs at a much faster rate in these ecosystems than scientists are able to document and study. Environmental DNA (eDNA) can be a promising tool to inventory biodiversity by taking advantage of the fact that organisms are continually releasing DNA into the environment. By collecting small samples of water, soil, and air, we can extract and sequence DNA to generate a snapshot in time of what lives in an area.

Our team of aquatic scientists from the Field Museum recently published a study in the *Journal of Freshwater Ecology* using eDNA as a tool to document vertebrate diversity along the Kankakee watershed. The Kankakee River, about 60 miles southwest of the Field Museum, is among the most diverse riverine systems in the state of Illinois. We included areas both within and outside of the Kankakee River State Park in an effort to describe the composition of the biodiversity by types of habitats. Using eDNA we documented nearly 147 species, which included 85 fishes, amphibians, and reptiles, as well as 38 bird species and 24 mammals that visited those sites in the Kankakee River. Additionally, when compared to using a seine net, a traditional tool for sampling fishes, eDNA sampling consistently detected more species of fishes. Interestingly, we found several non-native and imperiled species of concern in the state. Using eDNA we were able to show that vertebrate communities varied significantly in the species that occur among different types of habitats. Such information can be incredibly important for conservation planning and strategies.

We are excited for the promising use of this tool to inventory aquatic biodiversity and have several additional and ongoing collaborative eDNA studies at the Field Museum, from relic lakes in Mexico to biodiversity hotspots in the Amazon. We look forward to sharing our results in the future.

*(Top, left) Two species of fish found in the Kankakee River: Lake Chubsucker (Erimyzon sucetta) and Starhead Topminnow (Fundulus dispar).*

*(Above, left) Sophie Picq, PhD, processing eDNA samples in the lab at the Field Museum.*

*(Above, right) Lesley de Souza, PhD, and Andrew George, PhD, use a seine net to catch fishes in the Kankakee River.*

"One of the most exciting projects I have going on right now involves the boas found on the island of Madagascar...which has only four known boa species, which have never been subject of a modern genomic-level study."

# AN INTERVIEW WITH Sara Ruane, PhD

**ITF: What is your role and your responsibilities at the Field Museum?**

SR: I am the Women's Board Associate Curator of Herpetology. In this role, I run a research program that is focused on reptiles and amphibians. My research focuses primarily on phylogenetics and evolution, with a strong commitment to collections-based research. Using both contemporary and historical DNA, with respect to preserved museum specimens, I conduct empirical studies that clarify taxonomy and quantify global biodiversity for reptiles and amphibians, especially snakes. While much of my work uses museum collections in traditional ways, my recent studies have a large museomics focus, incorporating molecular data from fluid-preserved specimens; these studies are truly exemplars of how we can use historical museum specimens for modern systematics.

In addition to my role as a curator, I am also the newly appointed Director of Core Labs at the Field Museum, part of the Negaunee Integrative Research Center. The Field Museum has five Core Labs. They serve many different types of research across the Museum and are open for use by all Field Museum scientists and their collaborators. These labs support leading-edge research, with two of them being brand new facilities. The Core Labs include the X-ray Computed Tomography (XCT) Laboratory,

a state-of-the-art facility for 3D imaging of objects; Clean Biomolecular Lab, which is a space dedicated to the study of degraded and low yield DNA samples such as environmental DNA (eDNA) and ancient DNA. Some familiar spaces are also part of the new Core Lab Group, including the Scanning Electron Microscopy (SEM) Laboratory, the Pritzker Laboratory for Molecular Systematics and Evolution, and the Elemental Analysis Facility. As the Director of Core Labs, I manage and advocate for them as a group, as well as help fundraise to best maintain leading-edge research.

I am also the science advisor for the Women's Board and co-chair of the Field Museum Women in Science Committee. I also serve on a variety of other committees, advise and mentor students, and participate in many outreach events.

**ITF: Tell us about a project you are currently working on. What is your particular area of study?**

SR: One of the most exciting projects I have going on right now involves the boas found on the island of Madagascar. Since starting at the Field Museum in 2021, I have been to Madagascar four times. Madagascar has more than 100 species of snakes but there are only four known boa species and they have never been the subject of a modern genomic-level study, despite being very common and conspicuous across the island. Thanks to generous support from Mary and Bruce Feay, a team—including myself, colleagues, and a PhD student I co-advise in Madagascar—are collecting DNA samples from these snakes to ultimately determine if the number of species currently known is accurate (there may be more undescribed). We will examine gene flow across populations to determine if they are able to traverse the landscape despite human development.

Two other really exciting things are happening right now with respect to Field Museum exhibitions. In April, I will be featured in an installment of *The Changing Face of Science*, which is about people's expectations of what a scientist is or looks like. The exhibition will dig into my life not just as a scientist but also outside of science (including my favorite hobby: competitive dog training for agility trials!). Then, in June, a special Field Museum original exhibition *Reptiles Alive!* will open.

**ITF: How did your interest in science begin? And snakes?**

SR: When I was a little kid, I loved being outside and catching animals (mostly insects and invertebrates at that stage) and putting them in jars to keep in the house. My grandmother would save and clean out peanut butter jars for me for my collecting and I would fill them with centipedes, worms, and anything that I could catch that wouldn't bite or sting! I often went on walks in the woods with her and my grandfather, where we would spend time flipping over rocks and logs to see what was under them. This had a profound effect on me and I credit these early experiences for my interest in natural history. Seeing a snake in particular was always exciting and by 7 or 8 years old, I was keen to run after and grab any snakes I saw. Catching snakes, where you often have to instantly make a choice, is a huge adrenaline rush. As a kid and pre-internet, I read many books about snakes pertaining to keeping them as pets and finding them in the wild. I didn't know how you turned it into a job, but I remember telling my 5th grade teacher, Mr. Fedor, that I wanted to be a herpetologist when I grew up.

**ITF: What can you tell us about the herpetology collection at the Field Museum? Do you have a favorite specimen?**

SR: The Field Museum is one of the premier collections for reptiles and amphibians in the world! One really special specimen is the spider-tailed horned viper holotype (*Pseudocerastes urarachnoides*). It was collected in 1968 during a mammal expedition to Iran and everyone thought it was just an unusual version of a known species, with a growth or parasite on its tail. Turns out, this snake has a very fancy lure that looks just like a spider wiggling around, which the snake uses to attract prey. It's amazing! *Reptiles Alive!* opening in June will feature these snakes. Our specimen is the individual from which the entire species was described and made known scientifically. I am excited to use our new XCT Lab to take 3D-images of this snake to better understand the structure of its amazing spider-like tail.

**ITF: What advice or message would you like to share with the next generation of scientists?**

SR: I love working at the Field Museum so much and feel incredibly lucky to have a job that directly facilitates my research interests. If you have a strong interest and passion in any topic related to science, you can almost certainly make that a career or a strong component of your job if you are strategic. Finding those kinds of jobs can be a challenge but they are out there; it takes being persistent in your pursuits and getting the specific type of training these jobs require. Talking with experts already in the field is a great place to start as well.

*(Top, left) Sara Ruane with postdoctoral student Fandresena Rakotoarimalala in Ranomafana, Madagascar with a tree boa.*

*(Left) Sara Ruane and her pet snake Coolio, in 1994.*

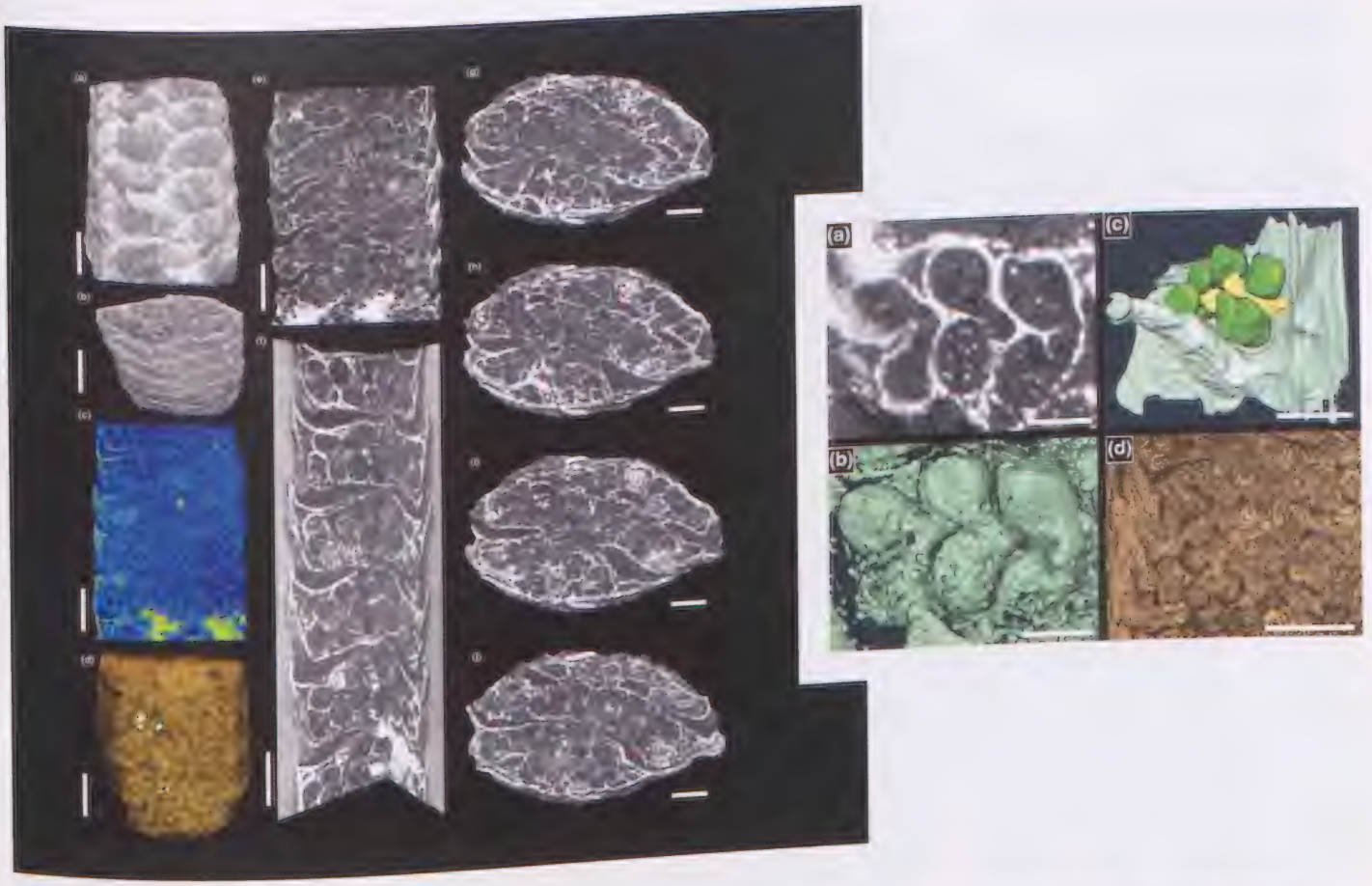
# REPTILES ALIVE!

A new, original exhibition coming soon to the Field Museum!

**Walk through deserts, tropical jungles, and temperate forests around the world as you learn about snakes, legless lizards, alligators, iguanas, turtles, and more.**

Through mechanical interactives and touchable models, explore how reptiles move, find food, and escape predators. Find out what it takes to be a herpetologist as you follow Dr. Sara Ruane's expeditions in Madagascar, New Guinea, and Illinois.

Mark your calendars: *Reptiles Alive!* will open at the Field Museum on Friday, June 20.




# 3D RECONSTRUCTION SOLVES FOSSIL MYSTERY

**BY MICHAEL D'ANTONIO, PHD,** NEGAUNEE POSTDOCTORAL RESEARCH SCIENTIST, NEGAUNEE INTEGRATIVE RESEARCH CENTER

You're probably not in the habit of pondering pine cones, but if you were, you'd notice that their bracts (the scale-like structures on the surface) exhibit a range of patterns as varied as the brickwork in any neighborhood of Chicago. There is a wide diversity of architectures in small fossil cones from the Late Carboniferous period (about 315–300 million years ago), which are useful for figuring out relationships between cone types. For example, some plant groups, like horsetails, have their bracts arranged on the axis in whorls, like a series of umbrella ribs, while in other groups the bracts alternate along the axis, or are located opposite each other. The rare Carboniferous fossil cone genus *Tetraphyllostrobus* has been considered enigmatic by fossil plant specialists since it was first described over 30 years ago. It externally resembled cones of the Sphenophyllales, an extinct plant group related to horsetails, except that the bracts were thought to have an opposite arrangement.

My colleagues and I challenged that thinking recently with a study in the *American Journal of Botany*, where we created a 3D reconstruction of a cone specimen, which externally resembles *Tetraphyllostrobus*, from the renowned Mazon Creek fossil assemblage in Illinois. The team included Negaunee Associate Curator of Paleobotany Fabiany Herrera, PhD, former Curator of Paleobotany, Field Museum Trustee Sir Peter Crane, PhD, FRS, Collections Associate Jack Wittry, and colleagues from the Smithsonian Institution and the University of Michigan.

Using a combination of advanced visualization techniques including X-ray micro-computed tomography (XCT), scanning electron microscopy, Airyscan confocal super-resolution microscopy, and optical microscopy, we determined that the cone had a whorled architecture and other anatomical characters specific to Sphenophyllales. We also analyzed spores preserved on the specimen, and determined them to be of a type unique to Sphenophyllales. After detailed comparison to other small sphenophyll cones, we concluded that the cone represented a new genus, *Hexaphyllostrobus kostorhysii*. The fossil was named "*kostorhysii*" in honor of Jim Kostorhys, an enthusiastic Mazon Creek collector and the donor of the specimen to the Field Museum. These findings show the utility of state-of-the-art visualization techniques for Carboniferous plant systematics and suggests that as better-preserved *Tetraphyllostrobus* material becomes available, reconstructions of that cone, too, will likely indicate a whorled architecture and an affinity to Sphenophyllales.

*(Top, left) Digital volume and surface renderings (a-d) and digital slices (e-j) from CT scanning of* Hexaphyllostrobus kostorhysii *showing the cone's external features and internal morphology and architecture.*

*(Top, right) Digital slice (a), 3D reconstruction (b), and volume renderings (c-d) from CT scanning of* Hexaphyllostrobus kostorhysii *showing a single spore-bearing bract and clusters of six sporangia.*

# ARCHAEOLOGY, CLIMATE CHANGE, AND HUMAN ADAPTATION IN SOUTHERN AFRICA

**BY FOREMAN BANDAMA, PHD,** ASSISTANT CURATOR OF AFRICAN ANTHROPOLOGY, NEGAUNEE INTEGRATIVE RESEARCH CENTER

Throughout human history, climates have changed with catastrophic or advantageous effects to life. Scientific reconstructions of climate change were previously used by archaeologists and environmental experts to account for the expansion and contraction of civilizations. In Africa south of the Zambezi River, climatic reconstructions suggested the region experienced warmer and wetter conditions between CE 900 and 1300, a time that coincided with the rise of the Mapungubwe civilization, though eventually the aridity that set in around 1300 CE was linked with the collapse of this kingdom.

Our study revealed that this approach is too simplistic, ignoring significant human agency in crafting ways to cope with the pressures of climate disasters while taking advantage of local microclimates and other indigenous knowledge systems for resiliency. Our archaeological research challenges this long-held environmental deterministic assumption that the 1300 CE drought brought by the medieval Little Ice Age triggered the collapse of civilizations in the Shashi-Limpopo Valley. While the Mapungubwe civilization did collapse, our research shows that other civilizations within the wider region persisted and thrived through the same climatic challenges, and in similar ecological settings. We draw on African cosmologies, resilience theory, and archaeological evidence from medieval sites of Mapela and Little Mapela (CE 1150-1489) to spotlight adaptation strategies utilized by their inhabitants to build resilience through time.

Even in cases of climatic extremes, humans responded to opportunities and constraints in context-specific ways. In this region, innovations that accorded this dynamism and longevity of societies were stimulated by the need to meet daily cultural, material, biological, and spiritual desires. The big lesson from this study is that arid environmental conditions neither limited nor inhibited the creativity of people in the past. To comprehend this local ingenuity, one needs to go beyond mere scientific reconstructions of climate data to include the reading of African knowledge systems and archaeology in holistic interpretations of the past.

*(Top) The elaborate dry-stone walling decoration on the summit of Little Mapela, showing labor investment in decoration and style at a time when Mapungubwe civilization had collapsed.*

*(Above) View of the heavily dry-stonewall terraced hill at Mapela showing continuous occupation during the warmer and wetter conditions (CE 900 and 1300), as well as during the drought of the 1300 CE medieval Little Ice Age.*

# FIELD MUSEUM SHINES AT XPRIZE COMPETITION

**BY MARYLITA POMA,** SCIENCE COMMUNICATOR, KELLER SCIENCE ACTION CENTER

Over the past five years, scientists from the Keller Science Action Center participated in the XPRIZE Rainforest competition—a challenge to determine who could most accurately assess rainforest biodiversity without physically entering it. In November, the competition concluded and the winners were announced among 40 teams from around the world.

A remarkable second place was awarded to the Map of Life Rapid Assessment (MOLRA) team, composed of scientists from the Field Museum, Rutgers University, Brazil's Universidade Federal do Amazonas, and Yale University. The Keller Science Action Center cohort was led by Mellon Senior Conservation Ecologist Nigel Pitman, PhD, with team members including Lead Conservation Scientist Lesley de Souza, PhD, Postdoctoral Scientist Sophie Picq, PhD, and Conservation Ecologist Cameron Rutt, PhD, along with Action Center Associates Ramiro Melinski, PhD, (ornithologist) and botanists Luis Torres, PhD, and Marcos Ríos, PhD.

Only six teams advanced to the finals, where they were challenged to accurately assess the biodiversity of a 250-acre section of rainforest in the Brazilian Amazon during a 72-hour timeframe. To achieve this, the MOLRA team used drone-based audio, photo, and eDNA sampling to make over 5,000 identifications across 225 plant and animal species and 109 morphospecies. A fleet of lightweight drones, most pre-programmed to fly automatic missions through the canopy, allowed the team to collect over 4,000 photos, 26 hours of audio recordings, and 24 separate eDNA samples in a single day. Identifying species from raw samples was achieved through advanced new modeling technology, state-of-the-art artificial intelligence algorithms, innovative eDNA processing techniques, and remote support from biodiversity experts all over the world.

The expedition also showcased a groundbreaking model of high-speed reporting. Within just 72 hours, the Map of Life team produced a comprehensive 200-page report packed with over 100 tables, figures, a photographic field guide, and a digital dashboard summarizing their findings. These remarkable outcomes are now helping to transform the Keller Science Action Center's data collection and reporting protocols. By integrating these innovations, the team is advancing its mission to be the world's most effective team at delivering insights that drive conservation action.

*(Above) Action Center scientists who were part of the Map of Life Rapid Assessment team celebrate their second place XPRIZE win while conducting research in Guyana.*

# RAPID INVENTORY TEAM EXPLORES GUYANA

By Marylita Poma
Science Communicator, Keller Science Action Center

**THE KELLER SCIENCE ACTION CENTER'S RAPID INVENTORY TEAM RECENTLY COMPLETED THE LARGEST EVER EXPEDITION IN THE REMOTE FORESTS OF SOUTHERN GUYANA.**

The Acarai-Corentyne Corridor spans nearly 1.3 million hectares located between the Essequibo and New rivers. This remote and largely unexplored region is part of the world's most ecologically intact forests. The expedition was composed of 17 international scientists and 38 Guyanese scientists, partners, and local experts from Indigenous villages in southern Guyana, making it one of the largest and most diverse Field Museum inventories to date.

Over 80 km of trails were generated for the expedition, weaving through a landscape marked by hundreds of rapids, waterfalls, and river islands. The team found extremely clear water without evidence of mining influences, and documented hundreds of plant and vertebrate species during the three weeks in the field. While analysis of data is still ongoing, the team reports 23 potentially new species (21 fishes, 2 herptiles), at least 21 species newly reported in Guyana (13 fishes, 6 herptiles, 1 bird, 1 plant), and at least 16 globally threatened species (11 mammals, 2 herptiles, 2 plants, 1 bird).

Innovative field methods—such as environmental DNA (eDNA) and ethnoecology—were utilized in a rapid inventory for the first time, including a subset of filters analyzed in-country to generate preliminary data from eDNA samples. Highlights included sightings of crested and harpy eagles; a complete set of the "giants" of Guyana's mammals; fish sampling in the New River headwaters (wholly new to science); and a megadiverse upland forest stretching over nearly 90% of the study area, with no patches of deforestation or other large-scale human influence. These findings bring new opportunities for knowledge exchange and capacity building across institutions as this was the most collaborative expedition carried out to date in Guyana, with participants from 16 Guyanese and international institutions and 3 Indigenous villages.

Immediately upon completing fieldwork, participants held a collaborative workshop with representatives from local government and other stakeholders to review findings and discuss opportunities for and threats to conservation in the study area. The recommendations presented have already reached the highest levels of government in Guyana, where the insights are being used to guide decisions on conservation areas and sustainable development.

In 2025, the Keller Science Action Center will provide continued evidence-based support to decision makers as they consider creating protected areas that will support biodiversity and enhance communities' quality of life in the Acarai-Corentyne Corridor and environs.

**Species identified while in Guyana:**

**23**
POTENTIAL NEW SPECIES

**21**
SPECIES NEWLY REPORTED IN GUYANA

**16**
GLOBALLY THREATENED SPECIES

*(Opposite) The Acarai-Corentyne Corridor is a 1.3 million-hectare expanse of wild forests, creeks and mountains stretching 275 km from the highest peaks of the Acarai Mountains.*

*(Below, left) Expedition leader Lesley de Souza PhD. and the fishes team collected specimens both during the day and night, resulting in a total of more than 3,000 fish gathered during the expedition.*

*(Below, right) Participants from 16 institutions and seven scientific disciplines took part in the 20-day rapid inventory.*

# WELCOME NEW FIELD LOYALTY CLUB MEMBERS

The Field Loyalty Club honors individuals who have made gifts or joined as members in at least 20 years. We are grateful to these dedicated friends of the Museum's whose long-time support has enabled the research of generations of scientists, cared for a collection of 40 million objects and specimens, and improved public education programs that share Museum science with students and guests.

"Members of the Field Loyalty Club demonstrate a commitment to the Museum that spans generations. Their longstanding support has enabled scientific research, protected our priceless collections, and sparked learning for countless visitors. We congratulate those who have obtained this meaningful achievement."

Kellie Siggers, PhD
President and CEO

**We welcome the newest members of the Field Loyalty Club who reached 20 years of dedication in 2024:**

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Mr. and Mrs. Gary D. Ahlquist
Deven L. Amenda and Joshua Muething
Becky and Andy Anderson
Geoffrey Anderson and Dennis Monteverde
Catherine Ashdown and Neal Lofchy
Joan E. Bachner and George Bachner
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[T] *Trustee*

*(Top) Curator of Flowering Plants Rick Ree, PhD, collections plant specimens in China's Hengduan Mountains. Generations of support by the Field Loyalty Club enable Museum scientists to travel the world to conduct leading-edge research.*

*(Above) The generosity of Field Loyalty Club members facilitates learning experiences and encounters with the collections for visitors, inspiring the next generation of scientists.*

# MUSEUMS FOR ALL

As a Museums for All partner, the Field Museum offers reduced admission to visitors who receive state food assistance. Anyone with an Electronic Benefits Transfer (EBT, Link) or WIC card can present the card to receive $3 admission per person for up to 6 people including the cardholder.

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The Field Museum salutes the people of Chicago for their long-standing support of the Museum through the Chicago Park District.

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For up-to-date information for all member events, visit **FIELDMUSEUM.ORG/MEMBEREVENTS**

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